

Serial No. 10/063,962  
Docket No. 13DV-13657  
Amendment dated August 12, 2005  
Reply to Office Action of May 12, 2005

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

### **Listing of Claims:**

Claim 1 (currently amended): A component having a coating on a surface thereof, the coating consisting essentially of zirconia partially stabilized by up to about 10 weight percent yttria and to which is alloyed at least one oxide additive chosen from the group consisting of ~~up to about 4 weight percent~~ lanthana, ~~up to about 3 weight percent~~ neodymia, and ~~up to about 10 weight percent~~ tantalum for a combined maximum of about 10 weight percent of the at least one oxide additive, the at least one oxide additive being uniformly incorporated atom-by-atom throughout the coating, the at least one oxide being:

tantalum only, wherein the tantalum content of the coating is about 10 weight percent maximum; or

lanthana only, wherein the lanthana content of the coating is about 4 weight percent maximum; or

a combination of tantalum and lanthana only, wherein the tantalum

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content of the coating is 10 weight percent maximum and the lanthana content of the coating is about 4 weight percent maximum; or

a combination of tantala and neodymia only, wherein the tantala content of the coating is about 10 weight percent maximum and the neodymia content of the coating is 0.6 weight percent maximum; or

a combination of lanthana and neodymia only, wherein the lanthana content of the coating is 1.0 weight percent maximum or the neodymia content of the coating is 0.6 weight percent maximum; or

a combination of tantala, lanthana, and neodymia, wherein the tantala content of the coating is 10 weight percent maximum and either the lanthana content of the coating is 1.0 weight percent maximum or the neodymia content of the coating is 0.6 weight percent maximum.

Claim 2 (original): A component according to claim 1, wherein the coating contains only one of the at least one oxide additive.

Claim 3 (currently amended): A component according to claim 1, wherein the at least one oxide additive consists of lanthana only. ~~is lanthana.~~

Claim 4 (previously presented): A component according to claim 3,

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wherein lanthana is present in the coating in an amount of about 0.1 to about 1 weight percent.

Claim 5 (currently amended): A component according to claim 1, wherein the coating contains ~~oxide additive is~~ neodymia.

Claim 6 (currently amended): A component according to claim 5, wherein neodymia is present in the coating in an amount of about 0.1 to ~~about~~ 0.6 weight percent.

Claim 7 (currently amended): A component according to claim 1, wherein the at least one oxide additive consists of tantala only ~~is tantala~~.

Claim 8 (original): A component according to claim 7, wherein tantala is present in the coating in an amount of about 0.5 to about 8 weight percent.

Claim 9 (currently amended): A component according to claim 1, wherein the coating consists of zirconia, yttria, and the at least one oxide additive.

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Claim 10 (original): A component according to claim 1, wherein the zirconia is partially stabilized by about one to about four weight percent yttria.

Claim 11 (original): A component according to claim 1, further comprising a metallic bond coat adhering the coating to the component.

Claim 12 (original): A component according to claim 11, wherein the metallic bond coat is a diffusion platinum aluminide.

Claim 13 (original): A component according to claim 1, wherein the component is a superalloy airfoil component of a gas turbine engine.

Claim 14 (currently amended): A gas turbine engine component comprising:

a superalloy substrate;  
a metallic bond coat on a surface of the substrate; and  
a thermal barrier coating having a columnar microstructure, the thermal barrier coating consisting essentially of zirconia partially stabilized by about one to about four weight percent yttria and in which is alloyed at least one  
~~, the thermal barrier coating further containing an oxide additive chosen from~~

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the group consisting of ~~up to about 4 weight percent~~ lanthana, ~~up to about 3 weight percent~~ neodymia, and ~~up to about 10 weight percent~~ tantala for a combined maximum of about 10 weight percent of the at least one oxide additive, the at least one oxide additive being uniformly incorporated atom-by-atom throughout the coating, the at least one oxide being:

tantala only, wherein the tantala content of the coating is about 10 weight percent maximum; or

lanthana only, wherein the lanthana content of the coating is about 4 weight percent maximum; or

a combination of tantala and lanthana only, wherein the tantala content of the coating is 10 weight percent maximum and the lanthana content of the coating is about 4 weight percent maximum; or

a combination of tantala and neodymia only, wherein the tantala content of the coating is about 10 weight percent maximum and the neodymia content of the coating is 0.6 weight percent maximum; or

a combination of lanthana and neodymia only, wherein the lanthana content of the coating is 1.0 weight percent maximum or the neodymia content of the coating is 0.6 weight percent maximum; or

a combination of tantala, lanthana, and neodymia, wherein the tantala content of the coating is 10 weight percent maximum and either the lanthana

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content of the coating is 1.0 weight percent maximum or the neodymia content of the coating is 0.6 weight percent maximum.

Claim 15 (currently amended): A gas turbine engine component according to claim 14, wherein the at least one oxide additive consists of lanthana only ~~is lanthana~~ and is present in the coating in an amount of about 0.1 to about 1 weight percent.

Claim 16 (currently amended): A gas turbine engine component according to claim 14, wherein the coating contains neodymia ~~oxide additive is neodymia and is present in the coating~~ in an amount of about 0.1 to ~~about~~ 0.6 weight percent.

Claim 17 (currently amended): A gas turbine engine component according to claim 14, wherein the at least one oxide additive consists of tantala only ~~is tantala~~ and is present in the coating in an amount of about 0.5 to about 8 weight percent.

Claim 18 (currently amended): A gas turbine engine component according to claim 14, wherein the coating consists of zirconia, yttria, and the at

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least one oxide additive, and the at least one oxide additive is tantala only,  
lanthana only, or the combination of tantala and lanthana only.

Claim 19 (original): A gas turbine engine component according to  
claim 14, wherein the metallic bond coat is a diffusion platinum aluminide.

Claim 20 (original): A gas turbine engine component according to  
claim 14, wherein the component is an airfoil component.